



STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
NASHVILLE, TENNESSEE 37243-0435

ROBERT J. MARTINEAU, JR.  
COMMISSIONER

BILL HASLAM  
GOVERNOR

March 7, 2017

**Via Electronic Mail to Erin.Hafkenschiel@nashville.gov**

Attn: Erin Hafkenschiel, Director of Transportation and Sustainability  
Mayor's Office of Infrastructure, Transportation, and Sustainability  
Metropolitan Government of Nashville and Davidson County  
1 Public Square  
Nashville, TN 37201

Dear Ms. Hafkenschiel:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the *Livable Nashville Draft Recommendations* (Draft Recommendations) prepared by the Mayor's Livable Nashville Committee (Committee).<sup>1</sup> The Committee was formed by Mayor Megan Barry on April 26, 2016, and is comprised of leaders from Nashville's public, private, environmental, academic, and philanthropic sectors— and charged with developing a shared vision for protecting and enhancing Nashville's livability and environmental quality. The Draft Recommendations seek to make Nashville the greenest city in the Southeast, by recommending Nashville pursue goals and actions across five focus-areas: Climate and Energy, Green Buildings, Natural Resources, Waste Reduction and Recycling, and Mobility. The strategies outlined under each focus-area are envisioned to improve energy efficiency, reduce waste generation while improving recycling and reuse efforts, continuing the progress made in reducing pollutants emitted that impact air, land and water, and increasing the use and availability of transportation measures that encourage physical activity and reduce the reliance on individual privately owned vehicles while making available more options for mass transportation. TDEC has the following comments regarding each respective section of the report.

**Greenhouse Gas Emissions Inventory**

- TDEC recommends adding the total Metropolitan Nashville-Davidson County (Metro Nashville) population for inventory years to the CO<sub>2</sub>e emissions comparisons table. This could help further depict the increase in population but overall decrease in per person greenhouse gas (GHG) emissions from the base year.
- TDEC recommends adding explanations regarding significant changes in the Community Greenhouse Gas Inventories table (page 2) from inventory year to inventory year. For instance, residential energy use decreased over 400,000 tons (from 2005 to 2014) while Nashville added residential structures.
- Under the Peer Cities Comparison (page 3), TDEC recommends replacing the Seattle data with another regional city such as Memphis, Charlotte, or Louisville.

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<sup>1</sup> TDEC entities providing input include the Division of Natural Areas, Division of Air Pollution Control, Division of Water Resources, Division of Solid Waste Management, Office of Energy Programs, and Office of Sustainable Practices.

## Climate and Energy

- Metro Nashville has been successful in upgrading its water and wastewater infrastructure to address water loss, which is a significant source of wasted water and energy resources. There is considerable opportunity for energy savings from reductions in water loss. TDEC encourages Metro Nashville to continue these efforts.
- Metro Nashville has also made great strides in installing automatic meter reading meters, which eliminate the hands-on meter reading of the past and serve as an advanced diagnostic tool for identifying where water leaks are occurring. TDEC encourages Metro Nashville to continue these efforts.
- Metro Nashville is already working to improve the sewer collection system, which will reduce infiltration and inflow and minimize the amount of wastewater requiring treatment and associated energy necessary for treatment processes. TDEC encourages Metro Nashville to continue these efforts.
- TDEC encourages Metro Nashville to perform analysis on energy efficiency improvements that are realized from the Draft Recommendations. A number of suggested actions will result in cost savings from improved energy usage and may actually result in savings that could assist in implementation of other aspects of the Draft Recommendations.
- TDEC recommends adding more detail to clarify the Climate and Energy targets and how each will be measured. For instance, what are the baselines? What units will be used to measure reductions?
- With regard to Strategy 1. “Establish Specific GHG Emission Reduction Targets and Timelines – C” TDEC recommends leveraging the department’s institutional knowledge regarding energy assurance and resiliency efforts.<sup>2</sup>
- With regard to Strategy 2. “Significantly Scale up Local Renewable Generation – A” TDEC recommends that Metro Nashville also collaborate with and cross-promote the Pathway Lending Energy Efficiency Loan Program, a low-interest, revolving loan fund to which the State of Tennessee (TDEC) and Tennessee Valley Authority (TVA) each committed \$15 million and Pathway Lending committed \$5 million. Eligible entities include for-profit and not-for-profit businesses and local governmental entities. Projects eligible for funding include a variety of energy efficiency measures, as well as renewable energy projects. To date, Pathway Lending has funded more than 200 such projects throughout the State.<sup>3</sup>
- With regard to Strategy 2. “Significantly Scale up Local Renewable Generation – A” TDEC recommends creating a market for pre-owned solar panels that would increase adaptation of distributed energy across income-levels. TDEC further encourages Metro Nashville to extend the Livable Nashville program commitment to a diverse supplier base and engage minority-owned, women-owned, service disabled veteran-owned, and small business enterprises.
- With regard to Strategy 2. “Significantly Scale up Local Renewable Generation – B” TDEC is supportive of decentralized power supplies in the state. In the event of an energy emergency, sites with solar panels may serve as an emergency source of electricity that could serve critical infrastructure and facilities (e.g., hospitals, shelters, food banks).
- With regard to Strategy 3. “Reduce GHG Emissions from Non-Building Assets – A” TDEC was awarded a 2013 U.S. Department of Energy (U.S. DOE) State Energy Program Competitive Award to provide education, outreach and technical assistance to local governments and public housing authorities in order to drive demand for energy improvement investments.<sup>4</sup> As part of this award, TDEC’s Office of Energy Programs (OEP) developed a suite of resources and technical assistance strategies to assist local governments with determining the costs and energy savings of LED streetlight conversions, including the creation of replicable ownership, tariff, and maintenance structures that produce beneficial outcomes for

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<sup>2</sup> Contact Ben Bolton, Energy Programs Administrator, at (615)532-8798 for more information on energy assurance and resiliency efforts.

<sup>3</sup> For more information on the Pathway Lending Energy Efficiency Loan Program please visit <http://www.tennessee.gov/environment/article/energy-tennessee-energy-efficiency-loan-program>

<sup>4</sup> For more information on the DOE State Energy Program 2013 Competitive Award please visit <http://www.tennessee.gov/environment/article/energy-doe-state-energy-program-2013-competitive-award>

both local governments and their utilities. These resources are currently being finalized and will be made available to Metro Nashville to inform its efforts.

- With regard to Strategy 3. “Reduce GHG Emissions from Non-Building Assets – A” TDEC also joined U.S. DOE’s Better Buildings Outdoor Lighting Accelerator (OLA) in 2014 in a collaborative and supportive role. OLA was designed to focus on the adoption and use of high efficiency outdoor lighting in the public sector, while developing best practice approaches to municipal system-wide replacement in the longer term. TDEC recommends that Metro Nashville review the various resources that were developed by OLA in considering possible approaches to a citywide retrofit.<sup>5</sup> TDEC also recommends that Metro Nashville meet with Erin Gill, Director of Sustainability for the City of Knoxville, to learn about her multi-year effort to implement a citywide streetlight retrofit in the City of Knoxville.<sup>6</sup>
- With regard to Strategy 3. “Reduce GHG Emissions from Non-Building Assets – B” TDEC recommends that Metro Nashville consider the development of a waste-to-energy gasification unit in order to generate renewable power and to reduce emissions from the solid waste sector. The world’s largest downdraft gasifier was recently deployed in Lebanon, Tennessee by PHG Energy.<sup>7</sup> By way of a thermo-chemical process the downdraft gasification plant is expected to convert 64 tons per day of waste into a fuel that will produce 300kw of electricity.<sup>8</sup> The gasifier will be used to power the internal energy requirements for the City’s wastewater treatment plant. In addition to the energy saved, the project is expected to cut back on new landfill waste by 8,000 tons annually and will aid in reducing carbon dioxide emissions by about 2,500 tons annually. The City of Lebanon utilized \$3.5 million in Qualified Energy Conservation Bonds (QECBs) to finance the project, as well as a \$250,000 Clean Tennessee Energy Grant, awarded by TDEC.<sup>9</sup>
- Metro Nashville may also wish to consider using biogas from landfills, livestock operations, or wastewater treatment plants as a source of renewable natural gas for use in vehicles.<sup>10</sup>
- With regard to Strategy 4. “Develop an Outreach and Education Campaign to Engage Citizens in Reducing GHG Emissions – A” TDEC recommends Nashville Electric Service partner with local high school academies with relevant programs in alternative energy and power for community outreach.
- Considering the Draft Recommendations’ emphasis on tracking metrics, TDEC recommends that Metro Nashville evaluate the benefits of utilizing existing tracking tools, as well as those under development. For example, Tennessee, five other states -- Georgia, Michigan, Minnesota, Oregon, Pennsylvania, and partners The Climate Registry (TCR) and the National Association of State Energy Officials (NASEO) won a competitive funding award from the U.S. Department of Energy (DOE) to develop a roadmap for a National Energy Efficiency Registry (NEER).<sup>11</sup> The NEER is a central repository that will allow the public and private sectors to transparently track energy efficiency attributes associated with energy efficiency initiatives, as well as help demonstrate progress toward energy goals and potential compliance with existing and future environmental goals and/or regulations. The NEER will also be able to track

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<sup>5</sup> For more information on the U.S. DOE’s Better Buildings OLA program please visit <https://betterbuildingsinitiative.energy.gov/accelerators/outdoor-lighting>

<sup>6</sup> In October 2016, Knoxville completed and issued a request for quote for a full-service LED streetlight retrofit. The City subsequently released a request for purchase (RFP) to the short list of qualified providers; responses to this RFP were due in February 2017. The project will replace the City’s 29,000 streetlights with LEDs, representing the largest LED streetlight project in the State to date. The \$13 million project is expected to save 15,062,352 kWh and \$1,054,364 in energy charges annually. After having worked with the local utility through various aspects related to streetlight ownership, maintenance arrangements, and revised utility tariffs; Erin is able to provide valuable insight on some of the more technical and nuanced facets of a streetlight retrofit.

<sup>7</sup> PHG Energy, November 16, 2015, “Lebanon Waste-to-Energy Plant Called Model for Partnerships” <http://www.phgenergy.com/news/lebanon-waste-to-energy-plant-called-model-for-partnerships>

<sup>8</sup> PHG Energy, March 4, 2015, “Sustainable Waste-To-Energy Facility Approved for Construction in Tennessee” <http://www.phgenergy.com/news/sustainable-waste-to-energy-facility-approved-for-construction-in-tennessee>

<sup>9</sup> For more information on the Clean Tennessee Energy Grants please visit <https://www.tn.gov/environment/article/grants-clean-tennessee-energy-grants>

<sup>10</sup> Additional information on biogas please visit the Alternative Fuels Data Center, [http://www.afdc.energy.gov/fuels/natural\\_gas\\_renewable.html](http://www.afdc.energy.gov/fuels/natural_gas_renewable.html)

<sup>11</sup> Under this award, the states and their partners are in the second year of a two-year, state-driven stakeholder process to develop the NEER’s Principles and Operating Rules, including its governance structure.

energy conservation and other types of reduction efforts, and it has the potential to catalyze new levels of voluntary public and private investment in energy efficiency. It will also support both public and private sectors in their efforts to utilize cost-effective energy efficiency investments as a means to improve economic competitiveness and environmental quality.

## Green Buildings

- With regard to Strategy 1. “Improve Energy Efficiency in Metro Buildings – A” TDEC recommends leveraging OEP’s State Facility Utility Management (SFUM) team as a resource in facility benchmarking and facility measures. The SFUM Utility Data Management (UDM) project in particular involves outreach to the same energy vendors as the proposed action. The UDM tool could potentially be used in the creation of a GHG tracking system, allowing for collaboration and best practice exchanges between benchmarking efforts at the state (OEP SFUM) and Metro Nashville.<sup>12</sup>
- With regard to Strategy 2. “Improve Energy Efficiency in Residential Buildings – A” TDEC recommends requiring Energy Star standards for homes built using the Barnes Affordable Housing Trust Fund and the Housing Incentives Pilot Program.
- With regard to Strategy 2. “Improve Energy Efficiency in Residential Buildings – A” TDEC recommends that Metro Nashville collaborate with the Green and Healthy Homes Initiative, various affordable housing nonprofits, and a health care provider to pilot a Pay for Performance model in low income communities.<sup>13</sup> TDEC also recommends that the Metro Property Assessor evaluation include a Home Energy Rating (HERS) or similar rating for all residential building stock and that this be updated whenever property is assessed.
- With regard to Strategy 3. “Improve Energy Efficiency in Commercial and Institutional Buildings – A” TDEC recommends that Metro-owned commercial buildings participate in TVA’s EnergyRight Solutions program to leverage program rebates.<sup>14</sup>
- With regard to Strategy 5. “Use Education and Outreach to Increase Individual Actions – C” Metro Nashville should encourage homeowners participate in TVA’s eScore program to receive a home audit and eligible rebates.<sup>15</sup> Metro Nashville should also encourage area businesses to participate in the Tennessee Green Star Partnership program, an environmental leadership program led by TDEC’s Office of Sustainable Practices.<sup>16</sup> Benefits of participation in this program include recognition and sharing of sustainable business best practices.

## Natural Resources

- Some of the activities described in the “Natural Resources” Section may require a National Pollutant Discharge Elimination System (NPDES) Stormwater Construction Permit, also known as the Construction General Permit (CGP), and/or Aquatic Resource Alteration Permits (ARAP).<sup>17</sup>
- TDEC supports and encourages Metro Nashville to pursue identified green infrastructure improvements. The strategies outlined in the Draft Recommendations will improve stream quality, control runoff and flooding. Additionally, it is expected that proposed activities protecting the Cumberland River watershed will also protect Metro Nashville’s drinking water supply. For example, TDEC encourages Metro Nashville to consider the use of flexible-pervious pavement where appropriate, such as greenways, and

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<sup>12</sup> OEP’s SFUM coordinator is Ryan Egly. He can be reached by phone at (615)253-1322.

<sup>13</sup> For more information on the Green & Healthy Homes Initiative please visit <http://www.greenandhealthyhomes.org/>

<sup>14</sup> For more information on the TVA EnergyRight Solutions program please visit <https://www.energyright.com/>

<sup>15</sup> For more information on the eScore program please visit <https://www.nespower.com/content.aspx?page=escore>

<sup>16</sup> For more information on the Tennessee Green Star Partnership please visit <https://www.tn.gov/environment/topic/sp-gs-green-star-partnership>

<sup>17</sup> For more information on TDEC DWR Permitting please visit <https://www.tn.gov/environment/topic/permit-water>.

parks trails.<sup>18</sup> Pervious pavement systems can act to both decrease stormwater and attenuate solids from water.

## **Waste Reduction and Recycling**

- With regard to Strategy 1. “Increase Residential Recycling – A” TDEC encourages Metro Nashville to perform a municipal solid waste and recycling characterization study, as it would benefit Metro Nashville’s plan to expand recycling programs by providing the city with data, which would allow for development of strategies tailored to predominant waste characteristics and recycling composition.<sup>19</sup>
- With regard to Strategy 1. “Increase Residential Recycling – B” TDEC suggests that the Final Recommendations incorporate language promoting reduction and reuse in association with the increased education and engagement surrounding recycling outlined under this strategy.
- With regard to Strategy 1. “Increase Residential Recycling – B” TDEC recommends incorporating the continued promotion and support of backyard composting by Metro Public Works into this section in the Final Draft.
- With regard to Strategy 2. “Increase Commercial Diversion and Recycling – A” TDEC recommends Metro Nashville evaluate recycling services provided to commercial entities in the Urban Service District to possibly identify additional opportunities for expanding services. TDEC recommends increasing the convenience of engaging in and incentivizing waste diversion and recycling at large office buildings and high rises in particular. The concentrated nature of waste, and recyclables generated by large office buildings provides a strategic target for increasing recycling and/or reducing waste generation.
- With regard to Strategy 2. “Increase Commercial Diversion and Recycling – B” TDEC encourages the Committee to create a recognition program for business and industry that have their own zero waste plans.
- With regard to Strategy 4. “Demonstrate Leadership on Food Waste Reduction – D” although outside the scope of food waste, exploring opportunities to increase recycling and composting of other organics such as yard wastes would further enhance this strategy’s discussion.
- With regard to Strategy 6. “Lead by Example” TDEC recommends the Committee consider quantifying the co-benefits of pursuing waste reduction and recycling lead by example strategies, specifically the number of direct jobs created from this strategy’s actions.

## **Mobility**

- With regard to Strategy 1. “Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System – A” TDEC recommends including performance parking pilot programs in the downtown mobility study to assess opportunities to reduce parking related idling and/or congestion.
- With regard to Strategy 1. “Organize Metro Institutions and Processes to Deliver a Better Multimodal Transportation System – A” TDEC recommends that Metro Nashville convene an equal number of government, business, and nonprofit stakeholders at their regular coordination meetings.
- With regard to Strategy 3. “Empower Nashvillians of All Ages and Abilities to Bike – C” TDEC encourages Metro Nashville to expand youth programming to promote biking through nonprofits like Oasis Bike Shop and the Hands on Nashville ReCycle event.
- With regard to Strategy 5. “Use Technology and Innovation to Improve Mobility System – D” TDEC recommends that Metro Nashville consider partnering with Local Motors, an automaker that has recently

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<sup>18</sup> Through the Tire Environmental Act OSP has money dedicated to funding tire recycling, which could include flexible pavement that uses recovered Tennessee tires. For more information please visit <https://www.tn.gov/environment/article/sp-tire-environmental-act-program>

<sup>19</sup> Metro Public Works and the Davidson County Solid Waste Regional Board are in the early stages of initiating a solid waste master plan and have begun coordinating this effort with SWM’s Materials Management Program.



introduced the Olli, a 3D-printed, autonomous, electric, on-demand shuttle bus that is partially recyclable and will be manufactured at the company's microfactory in Knoxville.<sup>20</sup>

- With regard to Strategy 5. "Use Technology and Innovation to Improve Mobility System – D" researchers at Tennessee's Oak Ridge National Laboratory (ORNL) are working on a number of projects focused on advanced vehicle technologies and data solutions for connected infrastructure.<sup>21</sup> TDEC recommends that Metro Nashville engage with ORNL in order to harness their technical expertise and to explore potential implementation of cutting edge technologies.<sup>22</sup>
- With regard to Strategy 6. "Green the Vehicle Fleet – A" the Volkswagen Settlement Amended Partial Consent Decree (VW settlement) may provide opportunities for Metro Nashville to enhance the electrification and reduce the environmental impact of its vehicle fleet, and is comprised of three main components, summarized as follows<sup>23</sup>:
  - Vehicle Recall: Volkswagen must remove from commerce in the United States or perform an approved emissions modification on at least 85% of the affected 2.0 liter vehicles by June 2019.
  - Zero Emission Vehicle (ZEV) Investment: VW is required to invest \$2 billion in ZEV charging infrastructure and the promotion of ZEVs. VW has created a separate entity within Volkswagen Group of America, known as Electrify America, LLC, to oversee this portion of the settlement.
  - Environmental Mitigation Trust Fund: VW is required to fund a \$2.7 billion mitigation trust fund for eligible projects undertaken by beneficiaries that reduce NOx.

TDEC has been identified by Tennessee Governor Bill Haslam as the Lead Agency for purposes of administering the State's trust allocation under the VW Settlement's Environmental Mitigation Trust Fund. Once the trust is established, TDEC will follow the steps outlined in the Settlement to apply for beneficiary status on behalf of the State, and will provide opportunity for stakeholder input regarding use of the Trust funds.

Whether or not Electrify America chooses to invest in Nashville as part of its National ZEV Investment, TDEC intends to position Electrify America to maximize the impact of its investments through well-coordinated decisions that are in keeping with the priorities of the State of Tennessee, its local governments, and other stakeholders.

Given that certain ZEV infrastructure expenditures are considered eligible projects under the VW settlement Environmental Mitigation Trust Fund, there may be overlap in activities between what may be financed through Electrify America's ZEV Investment and what is supported through a beneficiary's Environmental Mitigation Trust Fund allocation. To prevent the duplication of efforts and to increase the potential for collaboration and leveraging of funds derived from both the VW Settlement's Environmental Mitigation Trust Fund and Electrify America's National ZEV Investment, OEP has proposed that it function as a primary point of contact for Electrify America's efforts in Tennessee. TDEC has been coordinating with Metro Nashville on efforts related to the ZEV investment and encourages Metro Nashville to continue to engage with OEP on related efforts moving forward.

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<sup>20</sup> For more information on Olli please visit <https://localmotors.com/olli/>

<sup>21</sup> For more information on the ORNL – National Transportation Research Center please visit <http://web.ornl.gov/sci/transportation/facilities/ntrc/>

<sup>22</sup> Specifically, ORNL is working with the City of Chattanooga on transit signal prioritization and has expressed interest in assisting Nashville with similar efforts. Furthermore, ORNL is also working on a tool to estimate spatial distribution of power demand for wireless electric vehicle charging, in order to determine the most optimal wireless charging locations within a given roadway system. Recently, ORNL's power electronics team achieved what they claim is the world's first 20-kw wireless charging system for passenger vehicles with 90% efficiency. SAE International, "High-power Wireless Charging Technology", <http://articles.sae.org/15257/>.

<sup>23</sup> For more information on the Volkswagen Settlement Amended Partial Consent Decree please visit [http://www.tennessee.gov/assets/entities/environment/attachments/oep\\_vw\\_consent\\_decree\\_10.25.2016.pdf](http://www.tennessee.gov/assets/entities/environment/attachments/oep_vw_consent_decree_10.25.2016.pdf)

- With regard to Strategy 6. “Green the Vehicle Fleet – A” in 2012, ORNL, TVA, the Electric Power Research Institute, and TDEC partnered to advance electric vehicle (EV) charging infrastructure in the State by forming the Tennessee Electric Vehicle Advisory Council (TEVAC). TEVAC’s goals are to stay abreast of EV developments, track the adoption of EVs in the State, and provide guidance where appropriate on decisions affecting EV adoption and EV charging infrastructure. The group has since expanded to include Nissan North America, the DOE Clean Cities’ East Tennessee Clean Fuels Coalition, the Nashville Electric Service, ChargePoint, Schneider Electric, the Tennessee Department of Transportation, Metro Nashville, and other local governments. TDEC encourages Metro Nashville to continue to engage with TEVAC.
- With regard to Strategy 6. “Green the Vehicle Fleet – B” of the five largest school districts in Tennessee, Metro Nashville Public Schools is the only district that does not contract with private fleet operators. This presents an opportunity for Metro Nashville to convert its municipally owned school bus fleet to cleaner burning diesel or alternative fuels such as propane or compressed natural gas. In evaluating various alternative fuels and advanced vehicle technologies to reduce petroleum consumption within the municipal fleet, OEP recommends working with Tennessee Clean Fuels. Tennessee Clean Fuels is comprised of Tennessee’s two U.S. DOE-designated Clean Cities coalitions: the Middle-West Tennessee Clean Fuels Coalition and the East Tennessee Clean Fuels Coalition. The mission of Tennessee Clean Fuels is to promote cleaner alternative fuels and vehicles in order to improve air quality and health, curb dependence on petroleum, and support Tennessee’s economy.

TDEC appreciates the opportunity to comment on the Draft Recommendations. Please note that these comments are not indicative of approval or disapproval of the proposed action or its alternatives, nor should they be interpreted as an indication regarding future permitting decisions by TDEC. Overall, the Committee’s Draft Recommendations support our mission to enhance the quality of life for citizens of Tennessee and to be stewards of our natural environment. We support Metro Nashville’s efforts to examine long-term approaches to enhancing the quality of life in Nashville. TDEC looks forward to working collaboratively with Metro Nashville to implement the Draft Recommendations.

Sincerely,



Kendra Abkowitz, PhD  
 Director, Office of Policy and Planning  
 Tennessee Department of Environment and Conservation  
 (615) 532-8689  
 Kendra.Abkowitz@tn.gov

cc: Bill Avant, TDEC, TSP  
 Molly Cripps, TDEC, OEP  
 Lacey Hardin, TDEC, APC  
 Lisa Hughey, TDEC, SWM  
 Tom Moss, TDEC, DWR  
 Lori Munkeboe, TDEC, OSP  
 Stephanie A. Williams, TDEC, DNA